

Studies in aquatic insects X: Descriptions of five new species of the genus *Culoptila* Mosely (Trichoptera: Glossosomatidae) from México

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Abstract.—Five new species in the genus *Culoptila* Mosely from México are described and the male genitalia are figured. The species here described are *Culoptila acaena*, *C. azulae*, *C. denningi*, *C. barrerae* and *C. jamapa*.

During the last few decades, Flint, Holzenthal, Harris and the senior author have contributed significantly to our knowledge of the Neotropical caddisfly fauna. The Neotropical species of the genus *Culoptila* Mosely, however, have been little studied probably because of the infrequent collection of adults. In this paper we describe new species from the Mexican fauna. Mexican specimens of *Culoptila* are increasingly difficult to find because of the pollution and the destruction of the natural habitats of these insects.

The species described here were collected by the senior author and his students between the years 1977–1991 in the Mexican states that still have some patches of rain forest: Estado de Mexico, Guerrero, Veracruz, Oaxaca and Chiapas.

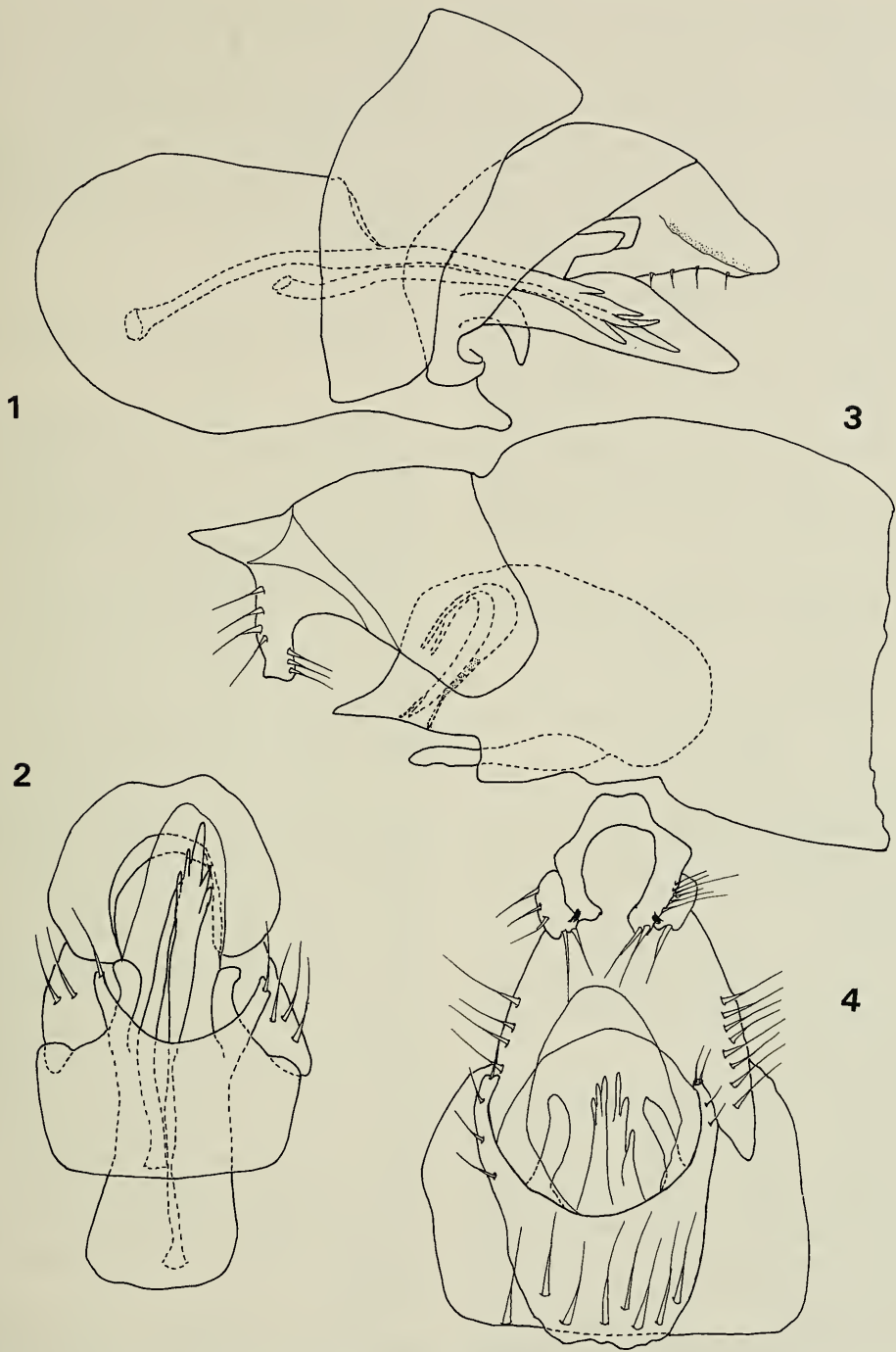
Genus Culoptila Mosely

Mosely (1954) originally established *Culoptila* for four Mexican species. Two decades later, Flint (1974a, 1974b) reported that number of species to be twelve, one from Guatemala, four from the United States, one from Costa Rica, and six Mexican species. In this paper we described five newly discovered species from México. Even though the larvae and pupae are not known, we are confident that the immatures of these species live in clear and unpolluted streams.

Culoptila jamapa, new species
(Figs. 1–2)

Diagnosis.—Because of the presence of two spines in the aedeagal sac, this species seems to be related to *Culoptila rusia* and *C. nahuatl*. It is also related to *C. amberia* because of the shape of the tenth tergum in ventral view. It is distinguished from these species by the apices of the two aedeagal spines, one very narrow and the other quite broad with four small subapical teeth. These characters states are not observed in any of the related species of the genus.

Description of adult.—Length of forewing 2 mm. Color in alcohol dark brown; forewing with a slight indication of a pale band at anastomosis. 6th sternum of male with a compressed apicomeresal knob. Male Genitalia: 9th segment, in lateral aspect, with ventral margin shorter than dorsal margin; anterior margin slightly produced and rounded; posterior margin nearly straight. 10th tergum, in ventral aspect, clearly rounded with posterior margin slightly truncate; in lateral aspect almost straight, with ventral arms wider basally, with apices truncate and curved anteriad. Venter of capsule slightly produced posteriad, in posteroventral aspect composed of a pair of short triangular sclerites. Phallus a large internal sac bearing two spines filling more than three-fourths of sac; one spine narrow with apex straight and acute,



Figs. 1-4. *Culoptila jamapa*, new species: 1, genitalia, lateral view; 2, genitalia, ventral view; 3, 4, *Culoptila acaena*, new species: 3, genitalia, lateral view; 4, genitalia, ventral view.

the other quite broad with four small subapical teeth; in lateral aspect apicodorsal angle produced to a broad hood.

Material.—Holotype ♂ and 1 paratype (♂); Mexico. Veracruz: Río Jamapa, 26 May 1981, C. M. & O. S. Flint (USNM). Other paratypes are as follows: Las Minas 20 km SW from Perote, 6 Sep 1977, J. Bueno, 1♂ (IBUNAM). Estado de México: Ruta 134 km 44 Toluca-Temascaltepec, 27 Apr 1990, J. Bueno y R. Barba, 6♂ and 2 females (IBUNAM); Temascaltepec Real de Arriba, 2 Jun 1990, A. Rojas y R. Gaviño, 1♂; 17 Aug 1990, 1♂; 26 Apr 1991, 1♂; 16 Feb 1991, 1♂, (IBUNAM); Puebla: Puente Apulco, situated at 97.89°W and 25°N, 1400 m, 1 May 1987, J. Bueno, 2♂ (IBUNAM).

Etymology.—The species epithet, *jama-pa*, is the name of the river in Veracruz where this species was collected.

Culoptila acaena, new species
(Figs. 3–4)

Diagnosis.—The shape of the tenth tergum in ventral aspect and the number and length of the spines of the aedeagus distinguish this species from all others assigned to the genus.

Description of adult.—Length of forewing 2.5 mm. Color in alcohol dark brown. 6th sternum of male with a compressed apicomeresal knob.

Male Genitalia: 9th tergum rectangular in lateral aspect. 10th tergum in lateral aspect with dorsal margin produced to a point, ventral arms rounded apically, each bearing a few stout anterior setae, dorsal margin clearly rectangular in posteroventral aspect; preapex of ventral arms with knobs with long and stout setae. Venter of capsule produced posteriad, in posteroventral aspect composed of a pair of long digitiform processes. Phallus a small internal sac, bearing a group of short and bent spines in lateral aspect; apicodorsal angle produced to a pointed hood, apex rounded apicoventrally.

Material.—Holotype ♂; Mexico. Guer-

rero: Carretera 130, 80 km NW from Zihuatanejo, 1200 m, 7 Jun 1984, J. Bueno (IBUNAM). Paratype ♂ with same label data as the holotype (IBUNAM).

Etymology.—The species epithet, *acaena*, is a Latinized Greek word (feminine) that refers to the spines, specifically of the aedeagus.

Culoptila barrerae new species.
(Figs. 5–6)

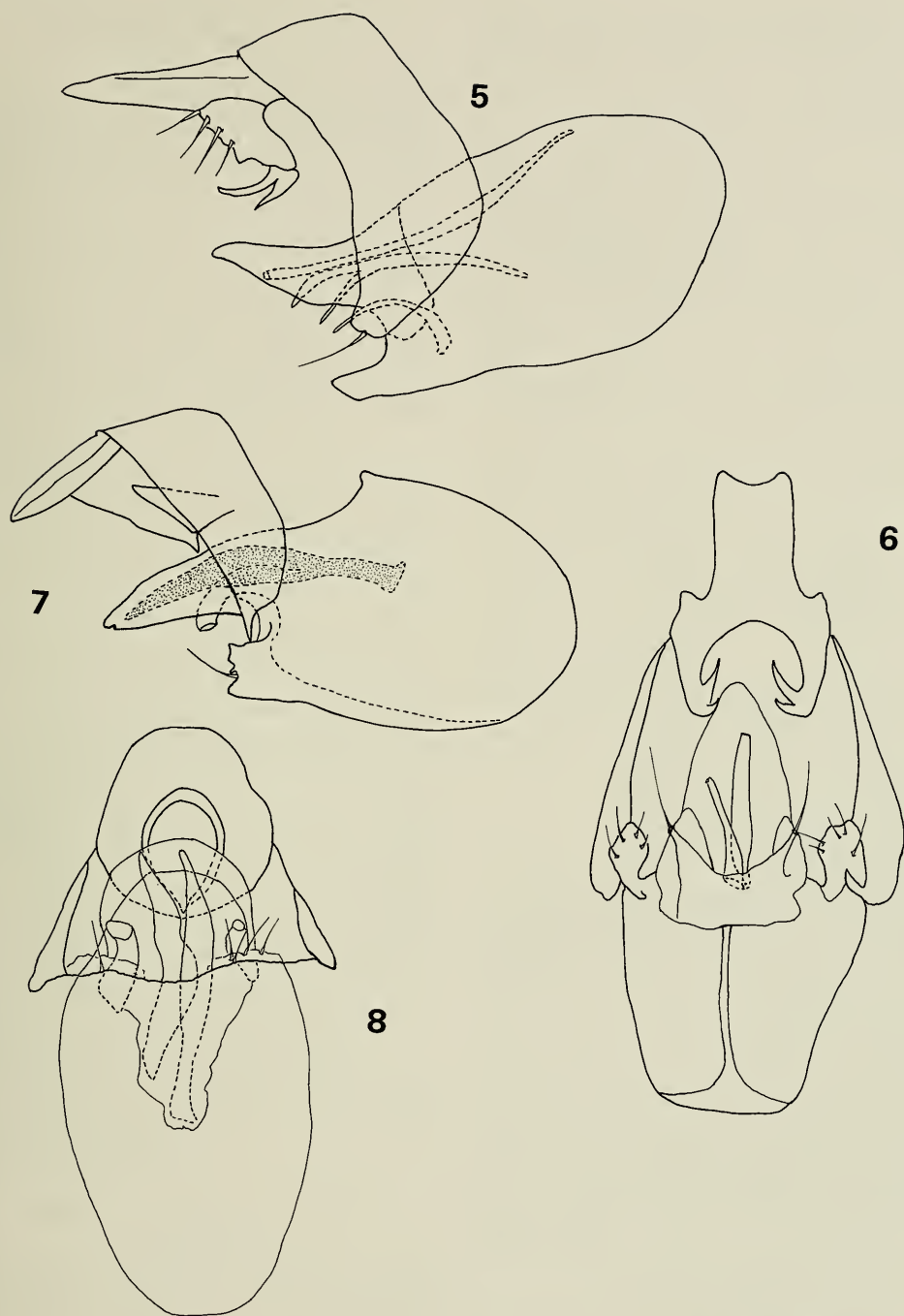
Diagnosis.—This is a very distinct species based on the shape of the tenth tergum and the ventral arms, which are wider basally and have the apices ending in two long spines curved posteriad. These character states are unique within the genus.

Description of adult.—Length of forewing 2 mm. Color in alcohol dark brown; forewing with a slight indication of a pale band at anastomosis. 6th sternum of male with a compressed apicomeresal knob.

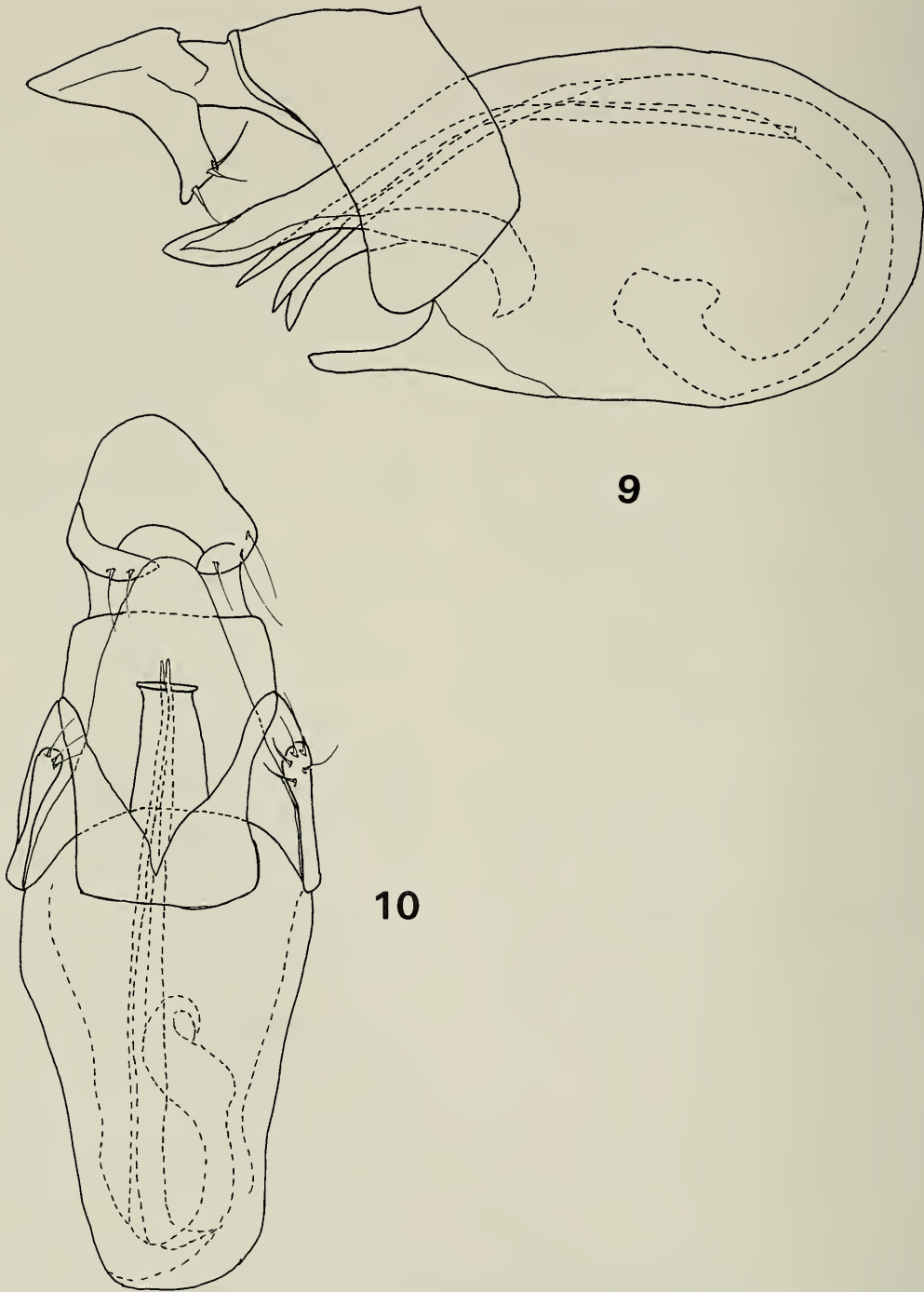
Male Genitalia: 9th segment, in lateral aspect, with ventral margin shorter than dorsal margin; anterior margin slightly produced and rounded; posterior margin nearly straight. 10th tergum, in dorsal aspect, clearly rectangular with posterior margin truncate; in lateral aspect almost straight, with ventral arms wider basally and apices ending in two long spines curved posteriad. Venter of capsule slightly produced posteriad; in posteroventral aspect, composed of a pair of very short triangular sclerites. Phallus a large internal sac bearing two spines; about half as long as sac; one spine with apex straight and acute; in lateral aspect apicodorsal angle produced to a pointed hood.

Material.—Holotype ♂; Mexico. Oaxaca: Pochutla, Finca Progreso, 2 June 1987, E. Barrera (IBUNAM). Paratypes: Same label data as the holotype 4♂ (IBUNAM).

Etymology.—The species epithet is a patronym we dedicated to the collector of the type series, Mr. Ernesto Barrera-Vargas.



Figs. 5-8. 5, 6, *Culoptila barrerai*, new species: 5, genitalia, lateral view; 6, genitalia, ventral view; 7, 8, *Culoptila denningi*, new species: 7, genitalia, lateral view; 8, genitalia, ventral view.



Figs. 9–10. *Culoptila azulae*, new species: 9, genitalia, lateral view; 10, genitalia, ventral view.

Culoptila denningi new species
(Figs. 7–8)

Diagnosis.—Based on the shape and length of the internal spines of the aedeagus, *Culoptila denningi* appears to be related to *C. moselyi* (Denning, 1965). However, in *C. moselyi* the spines of the internal sac of the aedeagus are of different sizes, but in *C. denningi* these spines appear to be similar in size and general appearance.

Description of adult.—Length of forewing 3 mm. Color in alcohol dark brown. 6th sternum of male with a compressed, apicomesal knob.

Male genitalia: 9th tergum narrowed ventrad. 10th tergum in lateral aspect, with ventral arms directed ventrad, tip obliquely truncate; in posteroventral aspect with dorsal margin nearly straight, inner tip of ventral arms convergent resulting in a circular opening. Venter of capsule produced to a pair of short, narrow lobes. Phallus with two short internal spines about half length of sac; apicodorsal margin produced to a long, broad hood, in posteroventral aspect widely rounded.

Material.—Holotype ♂; Mexico. Guerrero: Ruta 130, 80 km NW from Zihuatanejo, 1200 m, 7 Jun 1984, J. Bueno, (IBUNAM). Paratypes: same locality data as holotype, 2♂ (IBUNAM); Estado de México, Ruta 134, Temascaltepec Real de Arriba, Arroyo Colorado, 15 Mar 1991, A. Rojas y R. Gaviño, 2♂ (IBUNAM).

Etymology.—The species epithet is a patronym we dedicated to the memory of Dr. Donald G. Denning.

Culoptila azulae, new species
(Figs. 9–10)

Diagnosis.—Based on the shape of the aedeagus in lateral view, this species appears to be related to *C. nahuatl* Flint, but differs in having the venter of capsule composed of a pair of long digitiform sclerites, and in posteroventral aspect with the dorsal margin clearly rounded.

Description of adult.—Length of fore-

wing 2.5 mm. Color dark brown in alcohol. 6th sternum of male with a compressed apicomesal knob.

Male Genitalia: 9th tergum rectangular in lateral aspect. 10th tergum in lateral aspect with dorsal margin produced to a point, ventral arms rounded apically, each bearing a few stout anterior setae, in posteroventral aspect with dorsal margin clearly rounded, apex of ventral arms acute. Venter of capsule produced posteriad, in posteroventral aspect composed of a pair of long digitiform processes. Phallus a large internal sac, bearing two long spines, one spine curved around apex of sac, apicodorsal angle produced into a pointed hood, apicoventrally with a complex of structures.

Material.—Holotype ♂; Mexico. Chiapas: Reserva Montes Azules, 29 Apr 1986, R. Barba (IBUNAM). Paratypes, 2♂ (IBUNAM) and 2♂ (USNM), same locality data as the holotype.

Etymology.—The species epithet, *azulae*, is feminine and refers to the Spanish word for blue.

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Literature Cited

- Denning, D. G. 1965. New Trichoptera From United States and Mexico.—*The Pan-Pacific Entomologist* 41(4):262–272.
- Flint, O. S., Jr. 1974a. Studies of Neotropical caddisflies, XVIII: new species of Rhyacophilidae and Glossosomatidae (Trichoptera).—*Smithsonian Contributions to Zoology* 169:1–30.

- . 1974b. The Genus *Culoptila* Mosely in The United States, with two new combinations (Trichoptera: Glossosomatidae).—Proceedings of The Entomological Society of Washington 76:284.
- Mosely, M. E. 1954. The *Protoptila* group of the Glossosomatinae (Trichoptera:Rhyacophilidae).—Bulletin of British Museum (Natural History), Entomology 3(9):317–346.